



HATCHERY/BREEDER TIP...

IMPLEMENTING A SPIKING PROGRAM

By 40 weeks of age, broiler breeder fertility is naturally declining because rooster mating frequency is lower and physiologically the hen needs to be mated more often to maintain fertility. As mentioned in the May 1999 Hatchery-Breeder Tip, flock supervisors should be concerned with limiting body weight gains to a small consistent amount and preventing an accumulation of excess breast fleshing in order to minimize fertility decline. Spiking is also an excellent method to counter this natural decline in fertility.

Types of Spiking

Perhaps the most flexible and most expensive method of spiking is to grow extra males with a breeder flock. When the flock is moved to the laying house at 20-21 weeks of age, move the extra males to a stud farm and hold them there until the males are 26-28 weeks of age. After males sexually mature and weigh 20-25% more than the average 40 week old hen, they can be used as spike males. There are many obvious advantages of stud farms. Generally, the environment of the pen can cater to the needs of that particular group of roosters to get them in condition to successfully mate once placed in the hen house. The greatest disadvantage is the additional cost of running a separate facility.

The stud farm must have separate pens and feeding systems to meet the needs of each age group of males housed in the facility. Males should be provided 3-4 sq ft per bird, and 12-14 hours of light per day at 1-3 foot candles of light intensity. Equip the house with the same feeder and drinker the males will see in the hen house to reduce adjustments when they are moved. Provide enough feeder space (6-9 males per pan) to make the feed easily available to each male. Evaporative cooling is needed to prevent heat stress prior to moving the males to the hen house. The goal of this interim period is to allow for good weight gain and sexual maturity so that the roosters can compete with older males when moved to the hen house. The secondary goal is to limit mortality and injury of the roosters on the stud farm.

If a stud farm is not an option, extra males can be moved to the breeder farm with their original flock and held until they are 25-27 weeks of age. These males can be intermingled with the flock or placed into a small pen in the breeder house. The advantage of sending the extra males to the hen house is the reduction in facility cost when no stud farm is needed.

There are some disadvantages to housing stud males with a hen flock. If the roosters are placed with the laying flock, the ratio of males to females may be as high as 10-12 males per 100 hens. This high density may cause the maturing hens to stay on the slats or cause excessive male and female mortality. It is also disruptive to the hen flock when the extra males are removed at 26-29 weeks of age and early fertility may be slow to increase. If the extra males are penned in one area in the hen house, this practice alleviates the slating and hen mortality problem, but shorts the laying flock of feeding, watering, and nesting equipment. The pens are not built as permanent structures, and the males occasionally get out and hens get into the pen. Typically, there is little control of rooster feed intake when the hen trough is used to feed them. These pens tend to be on the far end of the hen house and often do not get much attention. Rooster mortality in the small holding pen tends to be high and management of the males less than optimum.

When rooster to hen ratio is low, roosters can be removed from a flock that is being sold and used as spike males. These males could be from those spiked into the flock as young males or they could be older males that are in good shape. The advantage of using roosters that were going for sale as spike roosters is the reduction in chick costs, rearing expenses, and facility expenses. However, these type roosters are normally used only when no other roosters are available. The disadvantage of this type spiking is the lower probability of improving fertility because of the age and variable condition of the males.

PUTTING KNOWLEDGE TO WORK

The greatest problem with any spiking program is the biosecurity risk. Blood test results must be obtained from each group of males prior to moving them to a stud farm and before moving them to a flock for spiking. Common vaccination and dubbing programs are essential as well.

Key Elements of Spiking

Before spiking, survey the roosters and remove the obvious cull roosters and any large inactive males. The large dominant males tend to interfere with mating activity of other males, especially the young, inexperienced spike males.

Impact on old males - The addition of 2-3 males per 100 females will initially cause a "reactivation" of the existing males and increase flock fertility and hatchability (Casanovas, 1999a). The addition of young males is directly responsible for this increased mating interest of the old males. This effect on fertility only happens if the existing males are in good physical shape. If they are overweight, have foot or leg problems, or in poor condition, do not expect to see this immediate improvement in fertility. The existing males may not be physically capable of increasing their mating frequency. Even if the old rooster is in good condition, this increased mating frequency may be short lived (4-6 weeks).

Adaptation of spike male - It is important that only sexually mature males be used for spiking. Otherwise, the young male can not compete with the older male for feed and water, and never adapts to the laying facility. High mortality usually results with very little long term improvement in fertility. To increase the chances that the young male will adapt and be accepted into the flock, provide extra feed (2-4 lb/100 roosters) for 2-3 days after spiking, and make sure the male feeder is low enough that the spike male can eat from it. The old males can be territorial about feed, and roosters that miss 1-2 days of feed are easy prey for dominant males (Casanovas, 1999a).

Impact of the spike male - Young males are inexperienced and take 4-6 weeks to effectively mate (Casanovas, 1999b). If the older males were reactivated, their mating activity will decline at about the same time the young rooster becomes effective at mating. The result is about 5 to 10 weeks of increased or sustained fertility. However, remember the percentage of old males to young males will be 2:1, and even though the young males are responsible for increasing or sustaining fertility the old males are important. The spike males do not replace the old males; they are purely supplemental.

Mortality - Expect that rooster mortality will double after spiking (1%, with an increase to 2-3%)(Casanovas, 1999b). Male mortality may take as much as 8-10 weeks to subside. Hen mortality will increase. The increase will not be as dramatic (increase to 0.3 to 1.0%) and should last only 1-2 weeks.

Generally, spiking results in a 1-3% increase fertility over a 5-10 week period. With some spiked flocks, fertility is maintained (better than 90%) through 60 weeks of age. However, with some flocks the improvement in fertility is not noticeable or never develops. If the spike male does not adjust to the hen house, you may not see any long term increase in fertility. If the old males are in such poor physically condition that you get no increase in mating frequency from them, fertility will slowly increase or just be maintained as the young males start to complete matings.

Summary

1. Spike with only sexually mature 26-28 week old roosters that weigh 20-25% more than the average 40 week old hen.
2. Provide extra feed at spiking and for 2-4 days afterwards. Make sure that the spike males get to feed and water by monitoring their access.
3. Effectiveness of the spike depends on: condition of both old and young males, adaptation of young male, access to feed and water.
4. Initially, spiking reactivates the old male to increase mating activity when they are physically able. This increases short term fertility.
5. As the young males gain experience, their mating efficiency increases which maintains flock fertility.

References

Casanovas, Pelayo 1999a. Methods of alleviation the age-related decline in the fertility of broiler breeder males. Master's Thesis. The University of Georgia, Athens, GA.

Casanovas, Pelayo, 1999b. Special Problems Report. Influence of spiking on rooster reproductive behavior and broiler breeder flock fertility. Poultry Science Department, The University of Georgia, Athens, GA.



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Consult with your poultry company representative before making management changes.

“Your local County Extension Agent is a source of more information on this subject.”